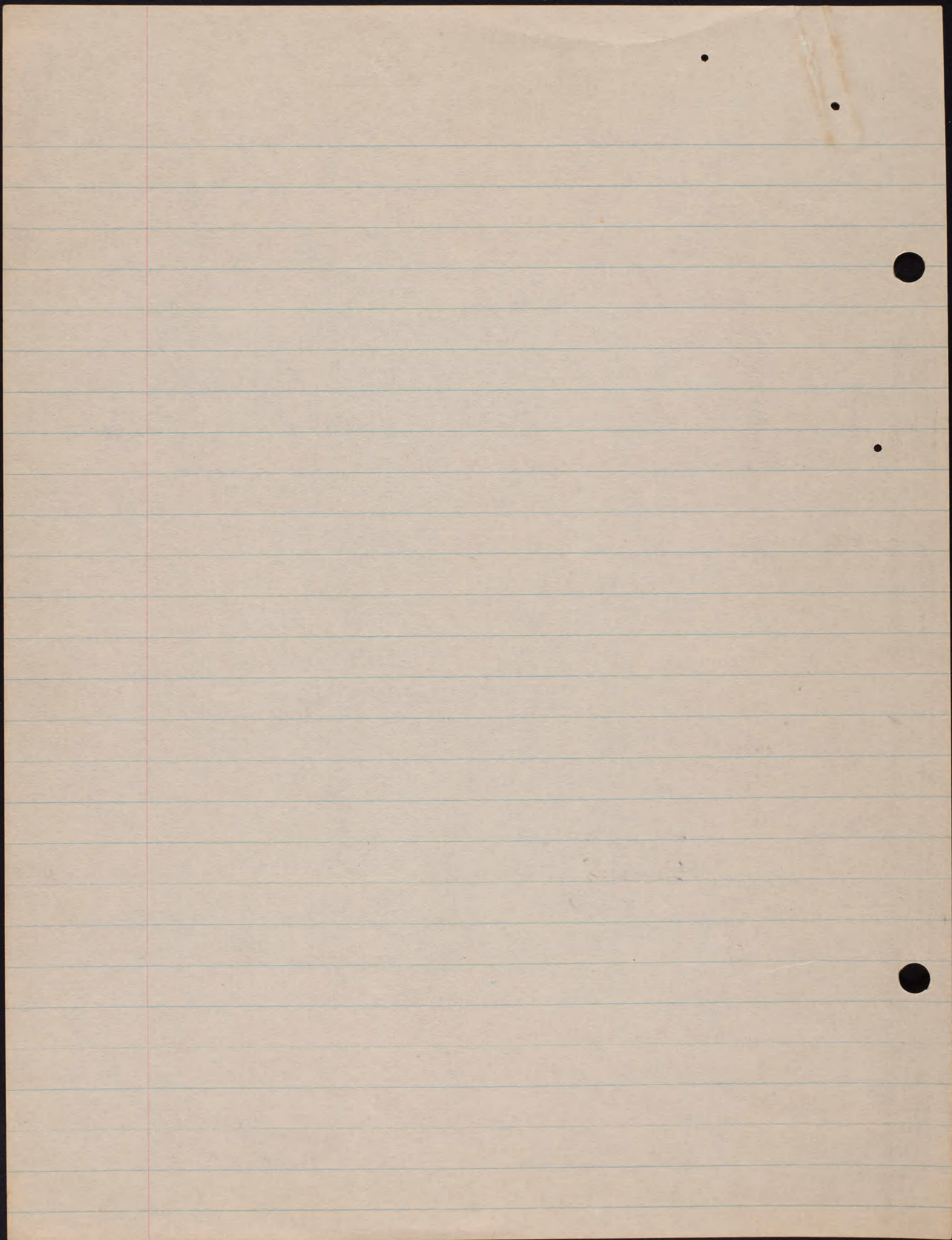


LEONTIDEUS ROSALIA

I



October 21, 1958
Washington Zoo

There is a single Golden Lion-marmoset here in a cage with a lot of squirrel Monkeys & Tamarins.

Quite upset by my appearance - unusual.

Did a lot of peering & swaying back & forth, apparently to fixate me. Done crouching on all fours. Sometimes with any one of the following calls.

This is a very very vocal animal, and so far I have heard the following:

Q

TW

Tll

A long whistle which might be W or the equivalent of K.

The Q is most closely associated with the long whistle - like note (which I shall call WK, for the time being). Long periods of alternation of one or more Q Notes, a long WK Note, one or more Q Notes, a long WK Note, etc.

The Q Notes associated with the WK are usually given with the mouth opening & closing. Sound quite like the Q Notes of the Panama Piche's. Probably quite aggressive, as the animal faces toward me, or even advances toward me when it gives them.

The WK is rather peculiar in a way. Sounds quite like the W Notes of the Panama Piche's, but I don't think it is homologous with the W. The animal might just conceivably be asking for or expecting food when it utters these KW Notes, but it doesn't actually come up to the food tray (which is near me), and it certainly

looking very hostile while it gives the WK, with all the swaying back & forth of Q. As the animal tends to face toward me, and even make out move of advancing, as it gives WK, I think the call must be very aggressive. Probably homologous and analogous with the K of the Panama Piche's.

The WK is always or almost always given as a single long-drawn note. Apparently never repeated. If the animal wants to give a particularly long WK pattern, it just stretches out the single note. Always given with mouth wide open.

There seems to be another type of Q in addition to the one described above. Given with mouth closed, and rather more muffled in sound than the Q's of the Panama Piche's. I shall call this MQ. Each MQ Note is almost like a "Chuck".

The Q and MQ patterns seem to intergrade completely. In sound. And some of the intermediate sounds may be given with just slight opening & closing of the mouth.

Both the typical MQ and notes intermediate between typical Q and MQ may be given in association with the WK, but the typical MQ, at least, seems to be more commonly given with the Ill (and I don't think the Q is ever really typically associated with the Ill) - see below. I think that the MQ may be considered an extremely inhibited Q, and the fact that MQ is so commonly associated with the Ill would suggest that the greater inhibition or muffling of the MQ is due to the fact that is produced when the escape drive is relatively stronger than it is in the typical Q.

The Ill is given by this animal quite frequently. Also at least usually with mouth closed. Rather muffled and bubbling in

quality. Apparently produced when the escape drive is relatively quite strong. The animal has several times approached me (and the food dish) very slowly and cautiously, and then suddenly turned and fled. The slow approach may be accompanied by a variety of calls and notes, but each time a Tll occurred just before the sudden retreat. Quite conclusive I think.

Q Notes may be suddenly accelerated and uttered in rapid series (of perhaps 4 or 5 notes at most?) in some circumstances. When the animal seems to be particularly upset during long bursts of vocalization and/or when there is some general outburst of hostility among the whole group in the cage. I think that these accelerated Q Notes must be considered a form of TW.

As far as I know, I have never heard MQ Notes accelerated to form a sort of TW.

Perhaps the WK is a form of W after all! A Squirrel Monkey came along & nudged the Golden Lion Marmoset. The Marmoset got very excited, and gave a burst of notes. All Q - TW. Not WK. A Panama Piche' would certainly have given K (& Q, of course) in the same circumstances. And it is also my impression that this monkey tends to give lots of WK after its hostility toward me, and the other calls, have begun to decline a little.

If this WK is homologous with the W of the Panama Piche's, however, it must contain a relatively stronger hostile component (and probably a relatively stronger attack component).

Just now the animal did utter WK notes in series. Comme ça: — — — This is reminiscent of some of the sequences of W Notes uttered by the Panama Piche's.

October 2, 1959
Paris Zoo

There is a pair of Golden Marmosets here, in a well cage by themselves. I was only able to observe them for a few minutes but I did have time to note the following.

They had 3 vocalizations; the Q, the S Ill, and the WK. All given as reactions to my appearance or approach. All apparently hostile. All quite like the corresponding vocalizations of the Washington animal (see above) in actual sound.

I was again struck by the fact that the S Ill appeared to be produced by a stronger escape component than the WK. Both animals frequently uttered the two calls in an S Ill → WK sequence. The S Ill was always uttered with the mouth closed or just open very slightly. The WK was always uttered with quite extreme MO. The MO was such that no teeth were visible — except the lower canines which were very prominent.

I think that the Q may be higher intensity, on the average, than either the S Ill and/or the WK. At least, the animals uttered a lot of Q notes when I first appeared, and then relatively fewer after I had been around for a while.

These animals have the same jerky "peering" or "side to side turning" movements of the head & neck as the Common Marmosets (see today's notes on Callithrix jacchus). When they are particularly nervous or alarmed.

Leontideus rosalia, I

September 23, 1961
Paris Zoo

There are now 3 Golden Marmosets here. 2 of them possibly the same as the 2 observed in October, 1957. In same cage.

Arrive to begin watching them 10:15 a.m. All 3 animals very excited when I first arrive. Rushing back & forth in their cage. Uttering lots of "TW"s and "WK"s.

I now think that the "WK"s of this species are strictly homologous with the "W"s of the Periclis's. So I shall call them "W" too, from now on.

The "TW" seems to be a rapid series of Q Notes. Obviously the same as the call described above on Oct. 21, 1958, p. 3.

The animals seem to utter their TW's and W's in a perfectly random order. All in a jumble.

After a few minutes, they also utter a few single Q's, in addition to the TW's. Probably a sign of declining intensity. (The form of the 2 calls would certainly suggest that the TW is nothing but the highest intensity form of Q. And the animals seem to be becoming a little less active now.)

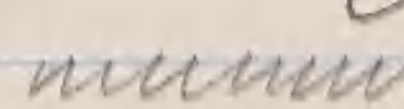

At the same time, one or more of the animals also utters a few S-Hll's.

Both the single Q's and the S-Hll's seem to be interspersed among the TW's and W's in a perfectly random fashion.

During this initial reaction to my presence, all 3 animals also perform a few SS movements. Nothing very much. Usually nothing more than a swaying to one side and back; or swaying to one side, swaying to the other side, and back. The SS pattern of this species does not seem to be very highly developed. Sometimes silent, sometimes with calls (certainly both W and TW, possibly also the other calls). Probably sometimes low intensity and sometimes high intensity.

The mouth movements accompanying these calls are more or less as I remember them. The W is uttered with extreme MO, only the canines showing. No trace of opening and closing. The TW is also accompanied by extreme MO, in a sense, but the lower jaw comes up appreciably between the successive notes of each TW series (this is a very rapid movement, and the mouth always remains quite wide).

delly open, even when the lower jaw is at its highest). The single Q's are accompanied by pronounced OCB, the mouth being opened widely (obviously MO) and then shut again "with a snap". In both the TW and Q, the canines are visible, but not the other teeth — just as in the W. The S-Hll seems to be uttered with the mouth completely closed.

The S-Hll is appreciably softer than the TW. The S-Hll might be represented as  if the TW is 

By 10:25 a.m., the animals are calming down a little. Uttering fewer W's and TW's. But one, at least, of the animals continues to utter quite a lot of S-Hll's. These S-Hll's often accompanied by SS.

One animal leaps away from me when I make a sudden movement. Obviously escape. This leap was accompanied by a definite TW.

The keeper starts to come around with food at 10:30 a.m. All 3 Golden Marmosets become greatly excited. Apparently very hostile to the keeper as he puts his hand into their cage. All become very vocal. Lots of W's and TW's, in a jumble. Also some real screams. These sound very much like the K of Pichie's. Hoarse. Uttered with mouth open (probably same MO as during W's).

One (at least) of the animals also lashes its tail violently from side to side during this outburst of calls. The animal which does this tail-lashing is the one I know uttered screams. But its tail-lashing accompanies both W's and TW's as well as screams.

Again all the calls appear to be uttered in random order during this vigorous outburst.

Animals calm down by 10:35 a.m. Uttering very few calls except S-Hll's. But S-Hll's are still quite common. This would suggest that S-Hll's are either low intensity and/or (more probably I think) partly friendly (as well as partly hostile).

Animals remain calm for some minutes. Moving about the cage in what I presume is a largely undisturbed manner. Still uttering quite a few S-Hll's. Still very few other calls. Except when

one of the animals pauses to fixate me intently. (And 2 of the animals do so quite frequently). When an animal fixates me, it usually utters quite prolonged W's, and occasionally a few Q's. No screams and very few TW's.

This might suggest that the W is not purely hostile. Probably partly hostile and partly friendly. Like the W of Puiche's. But relatively more strongly hostile.

The W of this species is apparently never accompanied by overt retreat movements.

The W looks almost like a high intensity expression of whatever is causing the S-Hll's.

After the animals have calmed down, one of them utters a "TW" composed of much softer notes than usual. Regular TW rhythm. But the individual notes are rather plaintive as well as soft. Rather like abbreviated W's. I think this pattern may be intermediate between a typical TW's and typical W's. (I shall call it "PTW").

The Q's of these animals are comparatively (by comparison with the Q's of Puiche's) low pitched and wooden-sounding. This might suggest that these Q's are strictly homologous with the B's of Cebini ????

One animal utters S-Hll's as it jumps toward me (10:50 a.m.). Then clings on the side of the cage nearest me, uttering W's and a few Q's. Apparently not very strongly hostile. Possibly another indication that S-Hll's and W's are partly friendly.

Then one or more of the animals utter a few more PTW's, while the group as a whole appears to be fairly calm.

One animal suddenly starts to utter a long jumble of many S-Hll's and Q's. While fixating me, neither advancing nor retreating. This might suggest that the hostile component of S-Hll's is similar to the hostility of Q's.

A few minutes later (11:00 a.m.), one animal suddenly utt

ers W-Scream. No break between the notes. Again uttered by an animal looking at me, without advancing or retreating.

This incident might suggest that the hostile component of the W is similar to the hostility of the Scream.

Then one animal utters a few S-Hll's while stationary, followed by a Q as it leaps away from me, followed by W's after stopping retreat, as it hangs on the far side of the cage, facing me.

This species doesn't seem to have any ritualized Sct. All the animals have done a little scratching from time to time, but not during the periods of excitement when they were most vocal.

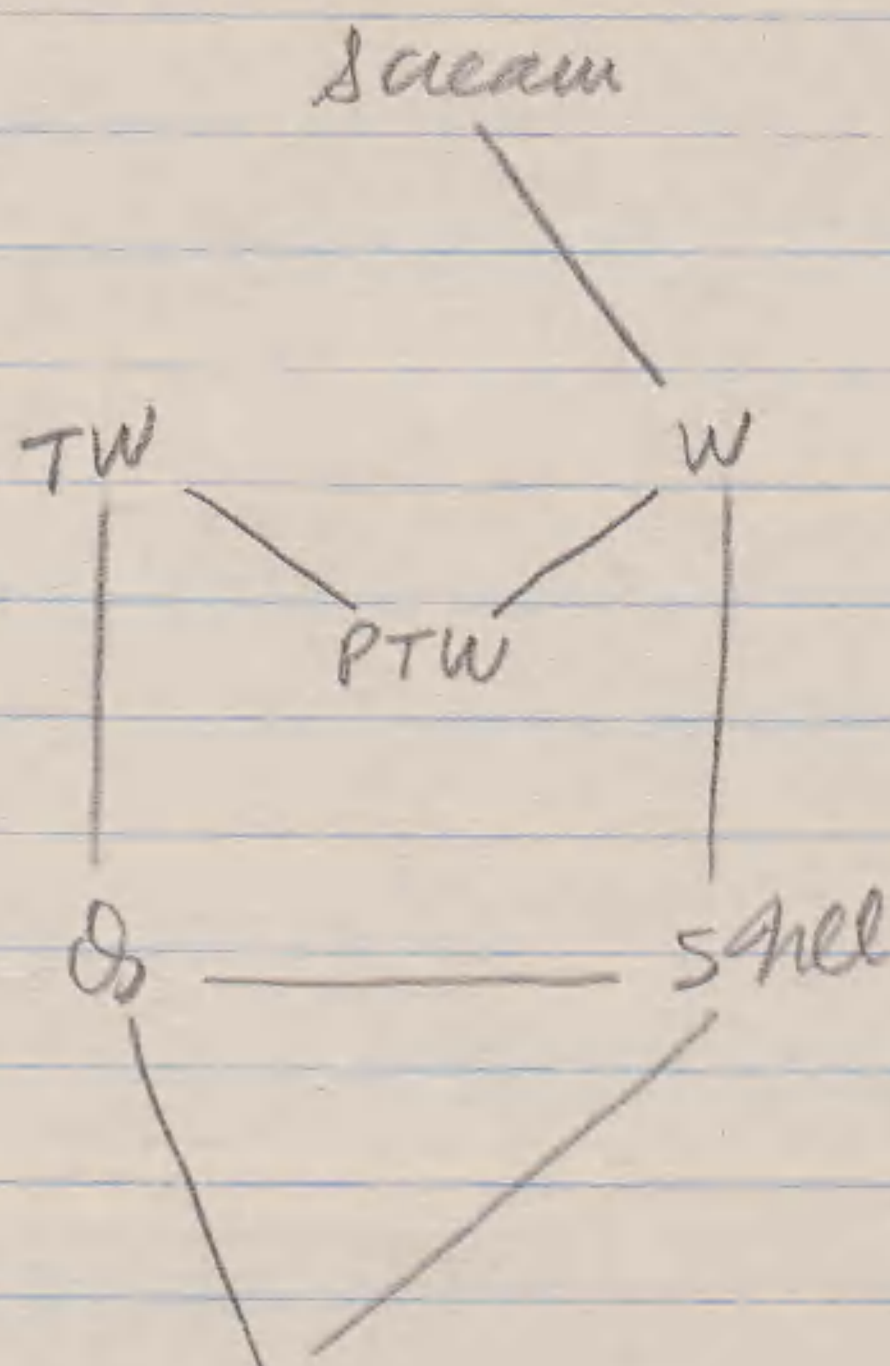
Two animals down at the bottom of the cage, 11:10 a.m. Feeding quietly. Then leap away when I make a sudden movement. Both utter Q's during the leap away from me. Then both hang on the far side of the cage, watching me, and uttering W's. One of them does a little SS as it utters the W's.

A few minutes later, one animal utters S-Hll's as it leaps away from me, startled by my movements. Then hangs on the far side of the cage, uttering S-Hll's, Q's, and W's, with a little SS.

All the displays of the animals today seem to have been reactions to me, rather than reactions to one another.

The vocal repertoire of this species might be represented comme

ca:



Leaving myself
11:15 a.m.

Leontideus rosalia +

September 24, 1961
Paris Zoo

✓ Arrive at Golden Marmoset cage 7:50 a.m.

Animals start to utter S-Hll's and Q's when I am some distance away. Then switch to TW's and W's when I get closer. Then fall silent when I look away and start to write.

When I suddenly look back at the animals, one utters a jumble of W's and S-Hll's. Then shuts up when I look away.

The same animal utters 1 S-Hll, accompanied by slight escape movements, when I make a sudden movement without looking at it. Then immediately utters W when I look at it !!!

Thus, the "usual" associations of S-Hll's are with Q's, on the one hand, and with W's, on the other hand.

The W's would appear to be almost certainly partly friendly. But the motivation of S-Hll's is still obscure (insofar as I can not be sure if they are partly friendly or not).

Animals absolutely quiet 8:00 a.m., as long as I do not look at them. When I turn my head very gently to look at them, one or two respond by Q's and S-Hll's.

Q's and S-Hll's must be relatively low intensity.

Animals shut up when I look away again. When I look back again, one responds by S-Hll's and W's.

One animal utters S-Hll just before running away from me, 8:05.

When I do not look at the animals, I hear quite a lot of PTW's coming from their cage. Little else. By squinting out of the corner of my eyes, I can see that these calls are uttered when one animal is feeding and another animal approaches. Presumably partly hostile and partly friendly. Probably fairly low intensity.

When I make some more movements without looking at the animals, one or more of the animals respond by uttering S-Hll's. Nothing more.

It is funny, but the animals do not seem to be upset by even violent movements by me — as long as I do not look at them. But they are always upset and excited if I look at them, even if I do not make any movements at all (except turning my head very gently).

As far as I can tell, these animals do not have any special hair-erection patterns.

When I do not look at the animals, and they are quite calm, I hear occasional single notes, or not very rapid series of notes coming from their cage. These notes sound like "detached" PTW notes or brief, soft, W's. Quite plaintive. They might also be considered a form of Squ! sound quite like the Squ Notes of many other species.

When I suddenly look at animals again, one responds by uttering W's and S-Hll's, while another responds by uttering S-Hll's and Q's. 8:13 a.m.

Σ Animals respond to their keepers, uttering the same calls, as they respond to me.

As far as I can tell, there is complete intergradation between typical single Squ Notes and typical PTW. But I don't think that the single Squ's intergrade with W's as smoothly. Nor do the PTW's seem to intergrade with either Q's or TW's very smoothly.

Typical TW's and PTW's seem to be composed of 4 or 5 notes.

Animals usually quite silent when undisturbed by me, as long as they keep apart from one another while feeding, 8:23 a.m.

One particular animal (the darkest colored of the 3 — I shall call it "A") always responds by uttering W's when I look at it. So

metimes, but by no means always, associated with Still's and/or a few Q's.

Another individual (relatively light, and apparently mated to A — I shall call it "AA") utters lots of Q's and TW's, as well as W's and Still's, when I look at it. Apparently more hostile to me.

It is my impression, that PTW's are seldom or never really provoked by or directed toward me !!

When I make a sudden movement, 2 animals leap away, uttering Still's as they do so. Then hang on far side cage, uttering W's and Q's (and/or TW).

There is no doubt but that the Still's do contain a relatively very strong escape component!

When I look at an animal and it responds by Still's and W's, the first call is usually or always an Still. This initial Still is followed by 1 or more W's, and additional Still's may also be interspersed among the W's.

While moving about the cage undisturbed, one or more of the animals utters a few single notes which would appear to be intermediate between typical Squ's and typical Q's. Louder and more abrupt than typical Squ's — but less so than typical Q's. 8:40 a.m.

Leaving for a minute 8:41. Back 8:43. Animals respond to my approach in usual way.

Correction. When I look at A, it first utters Still. Then W and TW. Declining to PTW, while the animal continues to look at me. So PTW's may be provoked by and directed toward me. This does not mean, however, that PTW's are not primarily intra-specific social reactions.

A and AA frequently sit side by side. But I have yet to see any social grooming or sex between them.

I think both A and AA may be ♂'s!

Things very dull now, 9:10 a.m.

All 3 animals perform vigorous escape movements when keeper comes to clean out their cages 9:12. Utter lots of calls. Lots of Sill's and Q's. A few TW's. Only A (by far the tamest of the animals), utters a few W's as well.

I think both Q and TW must be purely hostile. Containing an appreciable escape component, but relatively less than the Sill. Relative proportions of attack and escape may be the same in both Q and TW. TW only higher intensity than Q.

Only the lower canines are visible during MO. The upper canines are usually or always completely hidden.

When I approach the cage particularly closely, all 3 animals respond by uttering lots of TW's. Very little or nothing in the way of other calls. These TW's are certainly not accompanied by vigorous escape — until I come very close to the animals indeed.

TW's must be produced when hostility is very strong. Probably when both the attack and escape drives are very strong, and approximately equal to one another.

I noticed, during this incident, that the "MO" accompanying TW's is much less extreme than the MO accompanying W's. Mouth open widely during TW's, but never as much so as during extreme W's. And the upper canines are usually or always visible throughout TW's (both when lower jaw raised and when lowered). These are big differences from the MO during W's. Perhaps the mouth opening during TW's should not be called MO at all.

AA initiated while he uttered TW's when I approached the cage very closely.

It is interesting that these animals have never shown BT. No tendency to draw back corners of mouth.

Nor have they shown any trace of Hdd or LD!

Leaving 10:00 a.m.

Leontideus rosalia, I.September 25, 1961
Paris Zoo

Arrive Golden Marmoset cage 7:30 a.m.

AA utters S-Hll's & Q's when I appear. A utters W's. The third animal ignores me. Then AA utters W's and TW when I move, while A utters S-Hll's.

As far as I can tell, these 3 animals are all adult. All seem to have the same vocal repertory - although they utter their calls with different frequencies.

Looking at the Common Marmosets today (see today's notes on C. jacchus), I remember that I saw one pattern performed by the Golden yesterday which I forgot to describe. Partial eye-closing ("EC") when I started to approach the cage fairly closely. I think that this "EC" was done by only one animal. The animal was not greatly excited at the time. Either silent or (perhaps more probably) uttering comparatively low intensity calls.

I have not been able to provoke any EC by any of the Golden this morning. The EC of this species may be a comparatively rare pattern.

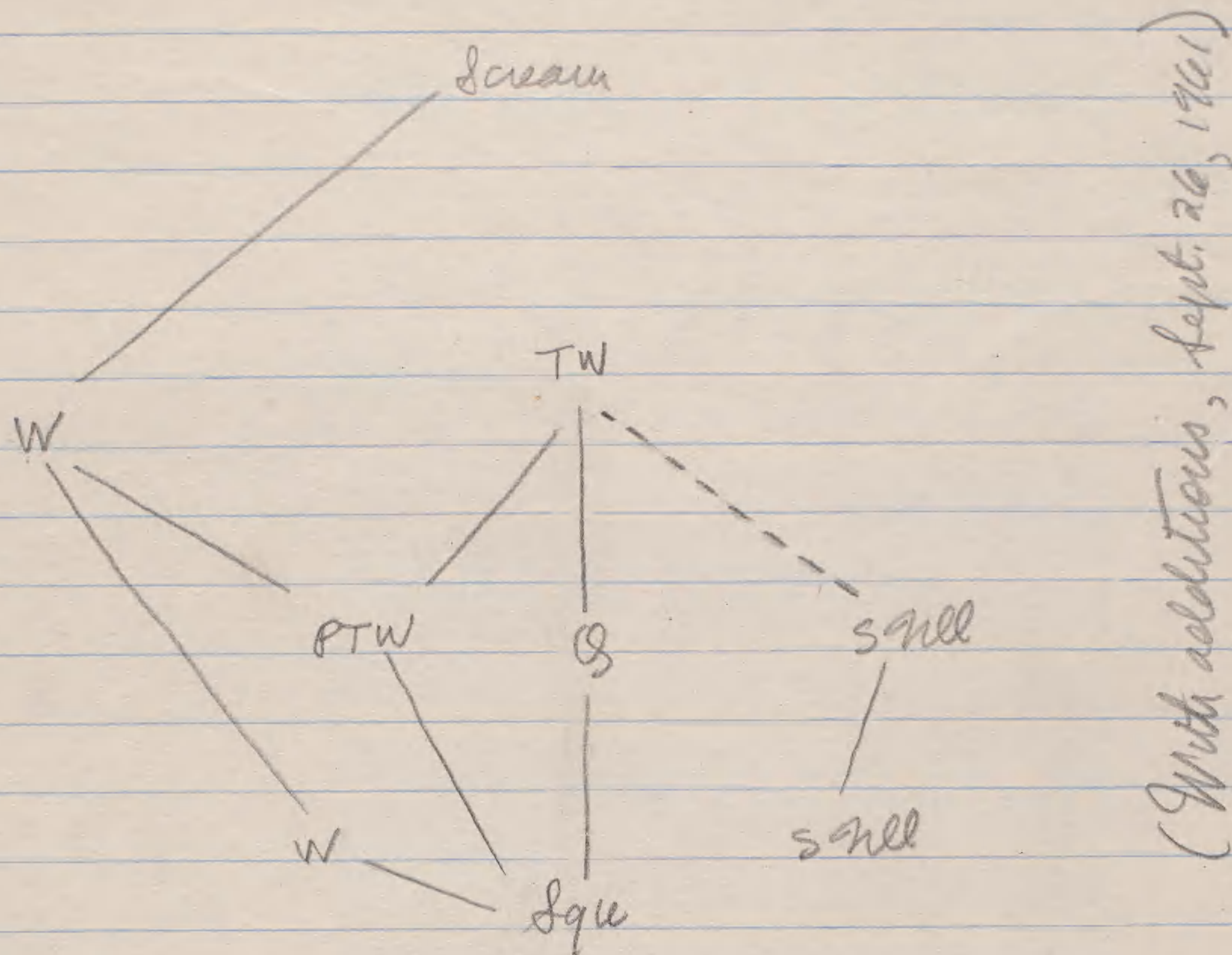
The animals don't seem to be doing anything new this morning, 9:25. Quite quiet.

In general, the display behavior of this species would seem to be nicely intermediate between that of the Pichie's and that of other Platyrrhini. The S-Hll's would seem to be particularly significant in this connection.

Several of the animals utter S-Hll's just as they start to leap about when disturbed (frightened) by some stimulus outside the house. 9:35.

I am beginning to think that some (at least) of the S-Hll's of this species are purely hostile. Not partly friendly.

The vocal repertory of this species might be represented by something like the following diagram:



✓ The tail of this species doesn't seem to be at all semi-prehensile.

✓ I have seen no trace of RB by any of these animals.

✓ No any fish.

Leaving 10:00 a.m.

Leontideus rosalia, I.

September 26, 1961
Paris Zoo

✓ Arrive 17:45 a.m. The Golden's do not respond very much when I first appear. Just a few W's. Then start to utter S-Hll's and TW's, interspersed among the W's, when I make some vigorous movements.

✓ A few minutes later, when I turn around violently, two of the animals leap away in escape, uttering S-Hll's as they leap. Then hang on far side of the cage, facing me, uttering TW's and W's.

✓ Several times, when everything is quiet, A has leapt to the front of the cage and fixated me intently. Usually utters S-Hll's as it leaps forward, then W's as it hangs on the front of the cage. I.E. obviously torn between fear and some non-hostile (friendly or feeding) motivation.

When a keeper walks by the window near the Golden's cage, A utters lots of S-Hll's and Q's, jumbled together.

These incidents are further evidence that Q's and W's are the "usual" associates of S-Hll's (see above, p. 9.).

8:20. The Golden's are now ignoring me most of the time. Just moving about the cage, more or less peacefully, and feeding from time to time. As long as they ignore me, they utter little or nothing but PTW's, Squ or brief W Notes (see below), and occasional S-Hll's.

Some (or all?) of the brief Squ-like notes are indistinguishable (to my ears) from abbreviated W's. I have also heard the animal utter single notes which were intermediate between typical Squ's and typical W's in length, and similar to both in quality. I.E. the Squ's and W's of this species seem to intergrade completely.

Some S-Hll's uttered by these animals are much louder than others. But there does seem to be a definite morphological "gap" between the loudest S-Hll's and the TW's.

A seems to utter Squ's and PTW's much more frequently than any of the other animals here.

The mouth opens a little with each Squ Note and closes abruptly at the end of the note.

A opens mouth halfway when uttering PTW. Lower jaw moves up and down a little - but only a little - in rhythm with the notes.

Mouth opening in Squ and PTW would thus appear to be essentially similar (in degree).

This morning, I have heard A utter quite a few more single notes intermediate between typical Squ's and typical Q's.

I have certainly heard AA utter Squ's like those of A. (Some of AA's Squ's may be produced with the mouth almost or completely closed). I am almost certain that AA has also uttered PTW like that of A. But I don't think that the third Golden has uttered either of these calls. (This third Golden is rather sluggish and left out of things, spend

so much of its time sleeping. Possibly sick.)

8:45. Both A and AA leap away in escape when a little kitten nuzzles by their cage. Utter Q's as they leap. A few minutes earlier, they had both uttered Q's, without leaping away, when the kitten ran by. Good evidence that the escape component is relatively less strong in Q's than in S-Hill's.

Possible connection. All the Squ's I have seen uttered by AA recently have been accompanied by opening of the mouth like the Squ's of A.

A suddenly utters a whole burst of calls when a keeper appears. Mostly W's, TW's, and S-Hill's. All accompanied by SS. SS perhaps usually most extreme during W's.

The arrangement of some of these calls was certainly not random. All or almost all the S-Hill's followed immediately after TW's. And all or almost all the TW's were followed immediately by S-Hill's. Only the W's appeared to be interspersed at random.

PTW is one of A's most common calls when he isn't reacting to me or any other human being.

Both upper and lower canines seem to be visible when A opens his mouth during PTW.

When the keeper comes to clean out the cage of the Golden's, the third Golden responds by uttering TW's. During these TW's, the hair on top of its head was erected, giving "brush cut" effect. (See sketch in drawing pad.)

Leaving 9:03 a.m.

Speaking to the keeper — he tells me that 2 of the Golden's (presumably AA and the third individual) have been at the zoo for a long time. At least 3 years. Fully adult. Probably extremely aged. The third individual (presumably A) is newer. Raised as a pet in a family. But already adult when given to the zoo.